
Physics 342, Homework 3

1: 2-25 (medium) - Hint - The force being asked for in parts a and b is the normal force. Don't forget the acceleration is centripetal so $m\vec{a}$ needs to be put in the proper form. SKIP D

2: 2-26 (short) - straightforward

3: 2-41 (short) - straightforward

4: 2-43 (medium to short) - graph this potential. Remember total energy is $1/2mv^2 + U(x)$, I want what happens to a particle depending on it's location and the potential there.

5: 2-47 (short) easy if you remember how to graph functions from calc 1.

6: 2-48 (short) trivial if you think a bit.

7: (potentially long, work in groups if you like) By hook or crook generate the graph in figure 2-9 by solving equation 2.45 numerically then inserting the numerical result into equation 2.43. Appendix H in the book gives the pseudocode used to generate the plot as well as the values used for U, V, k, etc. You should find that for $k=0$ $t=106$ seconds using these values. You may use Excel and code a root finder as shown in class or matlab/maple with built in root finders, or basically any method you like.